

Abstract

An all-optical bistable device, comprising:

a splitting device having first and second inputs and first and second outputs, for receiving first light beam at the first input and directing the first beam as second and third beams propagating through respective first and second outputs; first optical path between the first output and the second input and second optical path between the second output and the second input for creating combined optical path for the first and second beams at the second input; the combined optical path includes a saturable optical amplifier for enhancing and diminishing one of the second and the third beams for driving the optical amplifier into a saturation state to create one of two stable states in which one of the second and the third beams is an enhanced beam and the other beam is a diminishing beam; at least one tapping device for tapping output signal from one of the first and the second optical paths, and at least one coupling device for coupling input signal into one of the first and the second optical paths to flip between the two stable states by converting the enhanced beam into the diminishing beam.